FIG.1

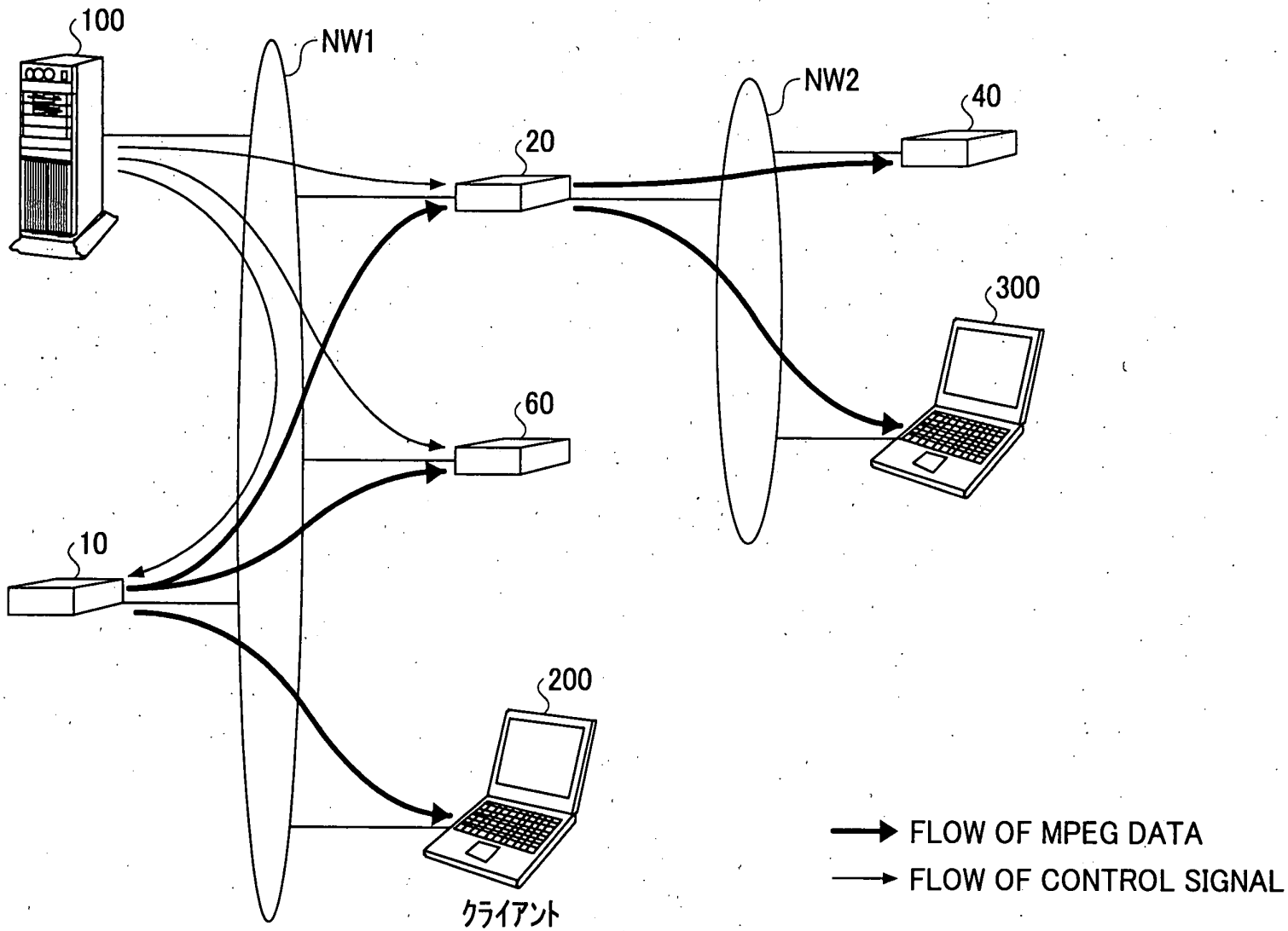

100
NW1
NW2
40
20
300
60
10
200
クライアント
FLOW OF MPEG DATA
FLOW OF CONTROL SIGNAL

FIG.2

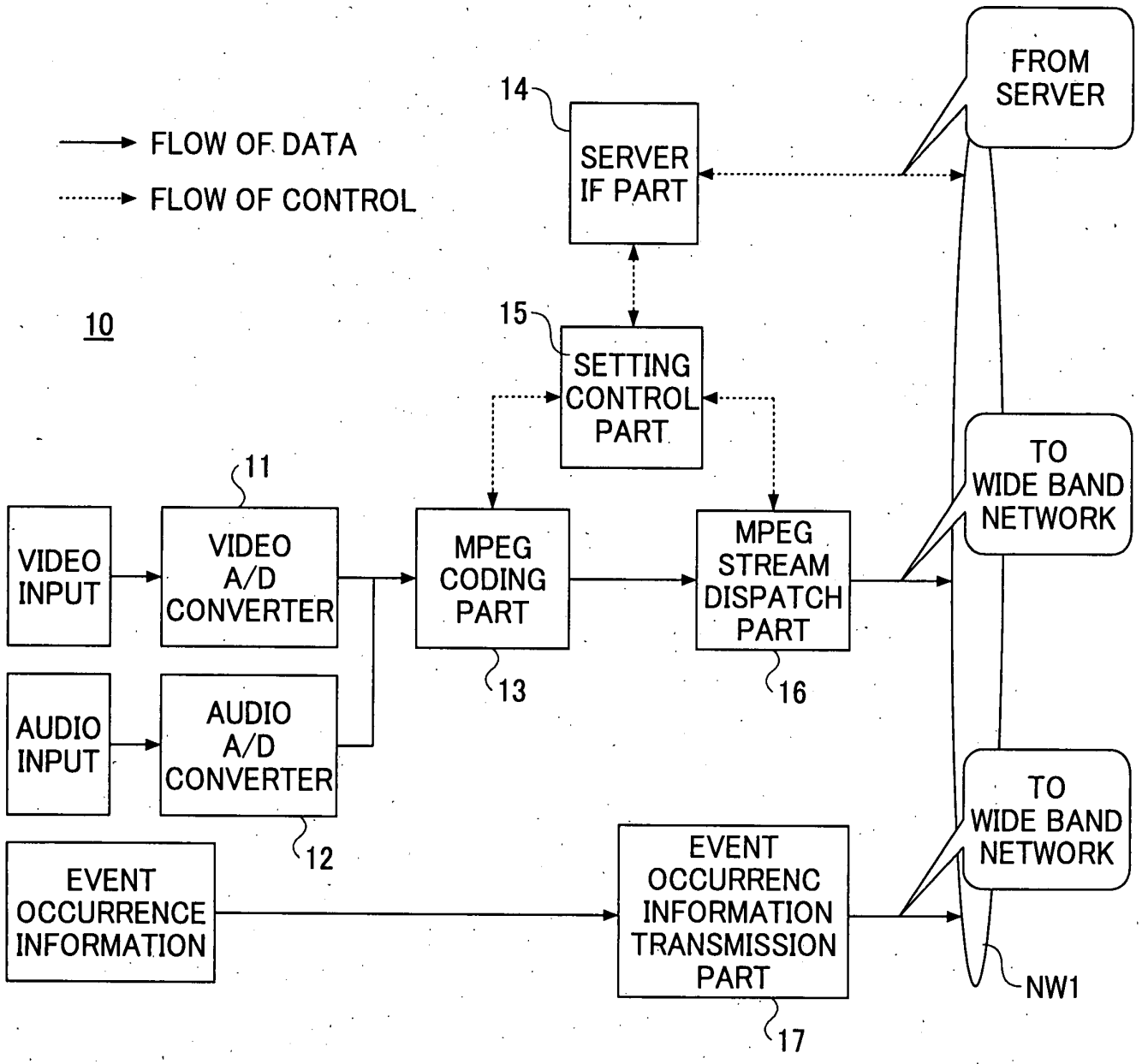

FLOW OF DATA
FLOW OF CONTROL
10
14
SERVER IF PART
FROM SERVER
15
SETTING CONTROL PART
11
VIDEO INPUT
VIDEO A/D CONVERTER
MPEG CODING PART
13
MPEG STREAM DISPATCH PART
16
TO WIDE BAND NETWORK
AUDIO INPUT
AUDIO A/D CONVERTER
12
EVENT OCCURRENCE INFORMATION
EVENT OCCURRENC INFORMATION TRANSMISSION PART
17
TO WIDE BAND NETWORK
NW1

FIG.3

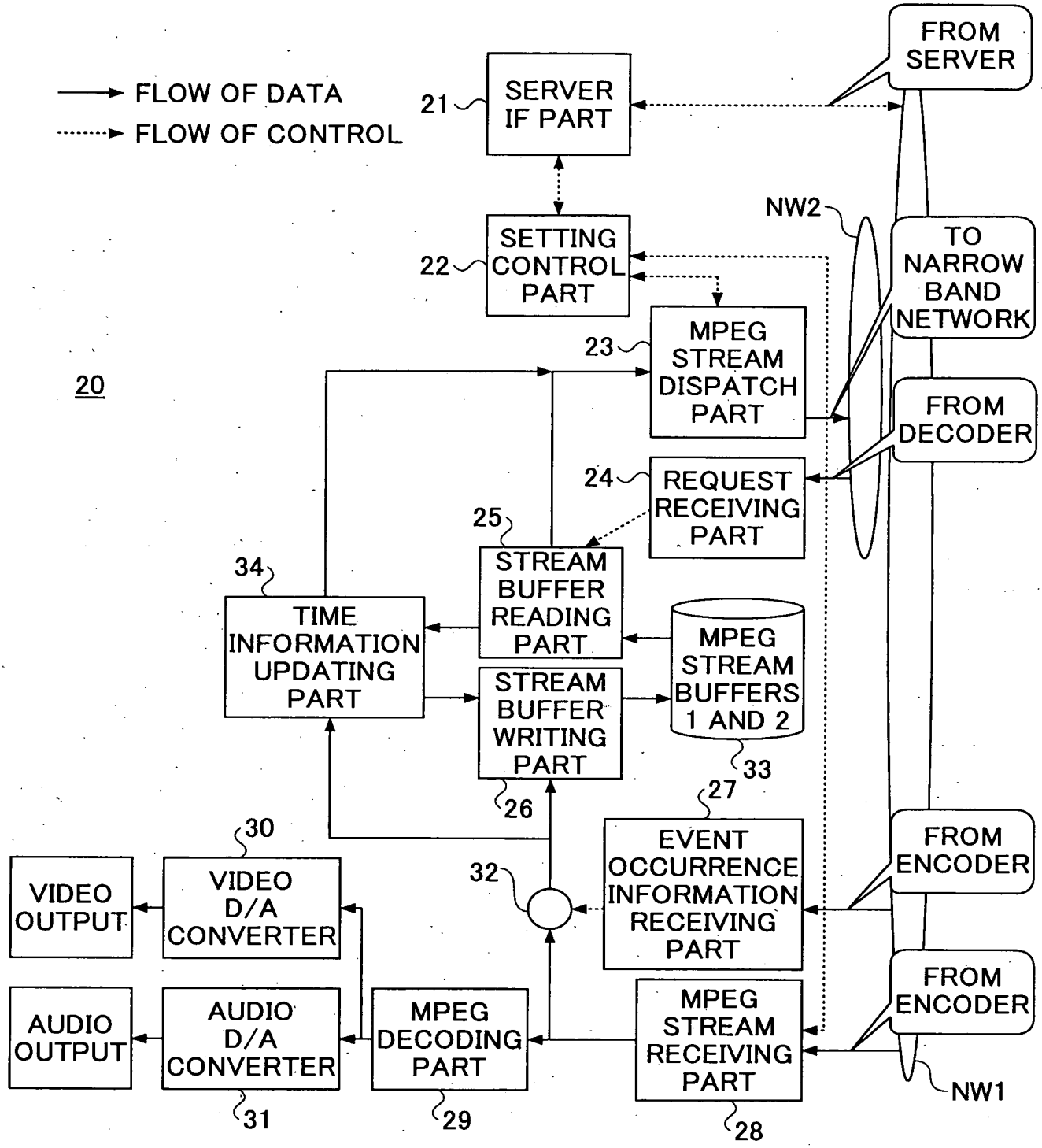

FLOW OF DATA
FLOW OF CONTROL
20
21
SERVER IF PART
22
SETTING CONTROL PART
23
MPEG STREAM DISPATCH PART
24
REQUEST RECEIVING PART
25
STREAM BUFFER READING PART
26
STREAM BUFFER WRITING PART
27
EVENT OCCURRENCE INFORMATION RECEIVING PART
28
MPEG STREAM RECEIVING PART
29
MPEG DECODING PART
30
VIDEO D/A CONVERTER
31
AUDIO D/A CONVERTER
32
33
MPEG STREAM BUFFERS 1 AND 2
34
TIME INFORMATION UPDATING PART
VIDEO OUTPUT
AUDIO OUTPUT
FROM SERVER
NW2
TO NARROW BAND NETWORK
FROM DECODER
FROM ENCODER
FROM ENCODER
NW1

FIG.4

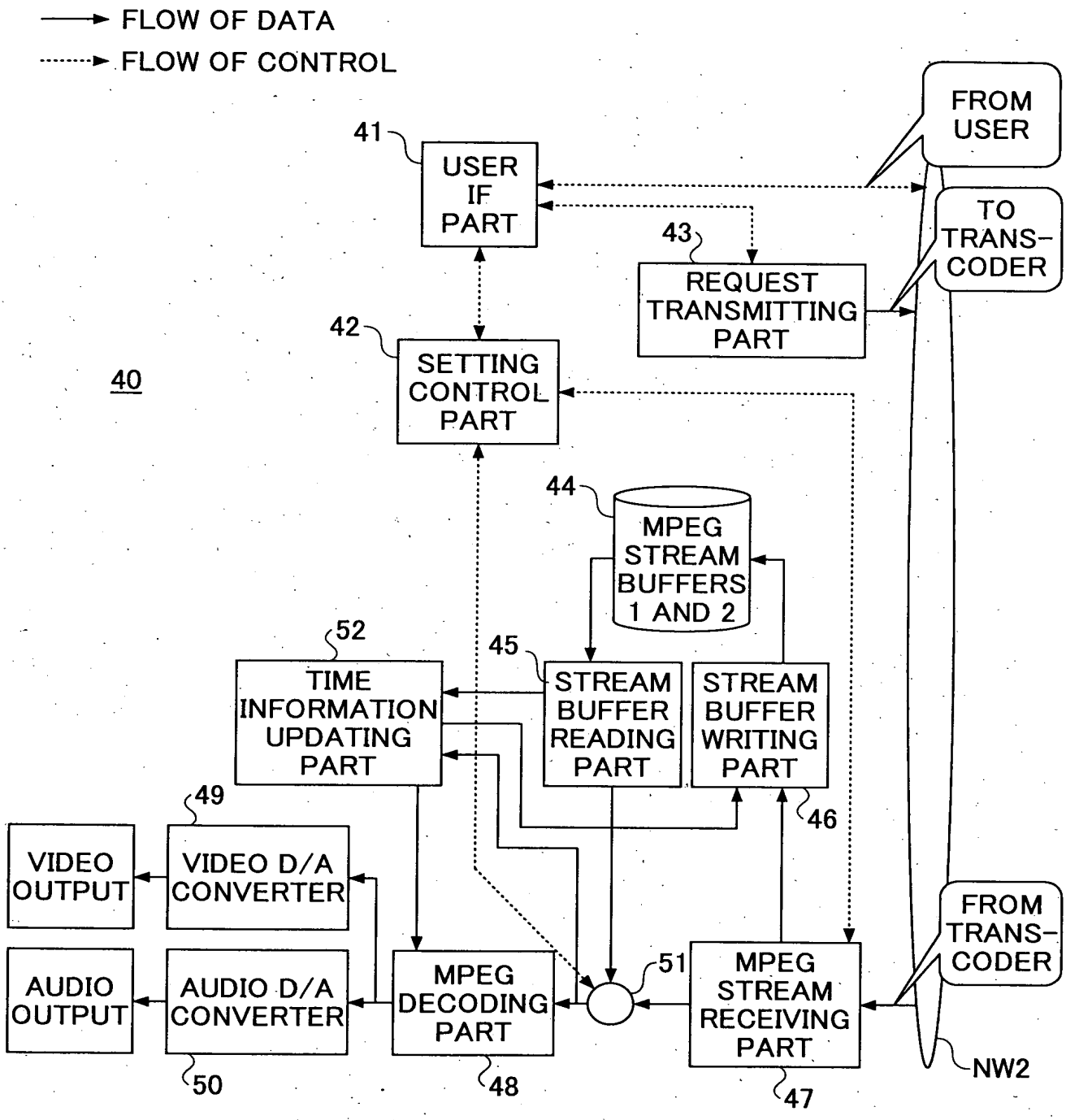

FLOW OF DATA
FLOW OF CONTROL
FROM USER
TO TRANS-CODER
41
USER IF PART
43
REQUEST TRANSMITTING PART
42
SETTING CONTROL PART
40
44
MPEG STREAM BUFFERS 1 AND 2
52
TIME INFORMATION UPDATING PART
45
STREAM BUFFER READING PART
STREAM BUFFER WRITING PART
46
49
VIDEO OUTPUT
VIDEO D/A CONVERTER
AUDIO OUTPUT
AUDIO D/A CONVERTER
50
MPEG DECODING PART
48
51
MPEG STREAM RECEIVING PART
47
FROM TRANS-CODER
NW2

FIG.5

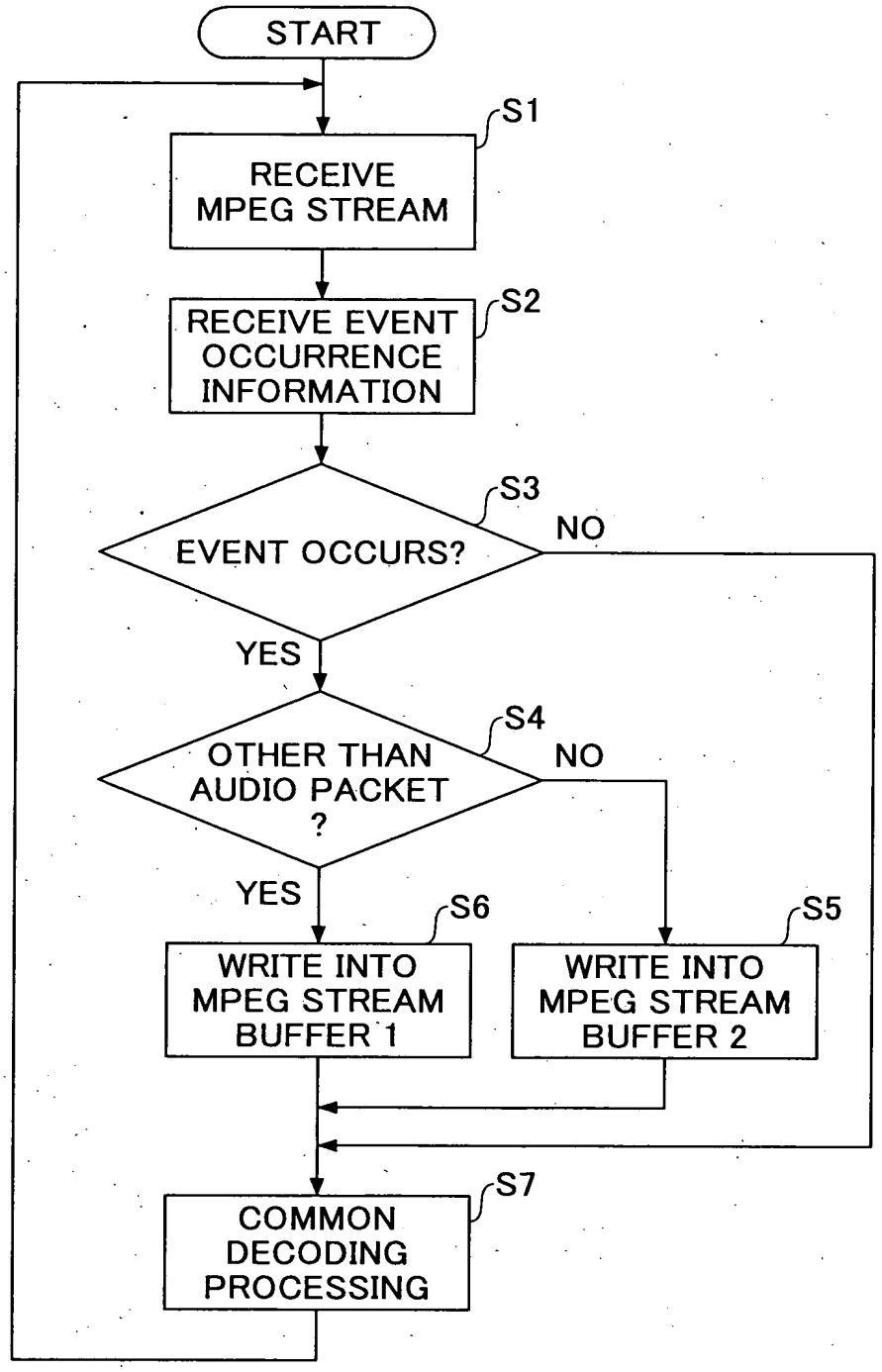

START
S1
RECEIVE MPEG STREAM
S2
RECEIVE EVENT OCCURRENCE INFORMATION
S3
EVENT OCCURS?
NO
YES
S4
OTHER THAN AUDIO PACKET ?
NO
YES
S6
WRITE INTO MPEG STREAM BUFFER 1
S5
WRITE INTO MPEG STREAM BUFFER 2
S7
COMMON DECODING PROCESSING

FIG.6

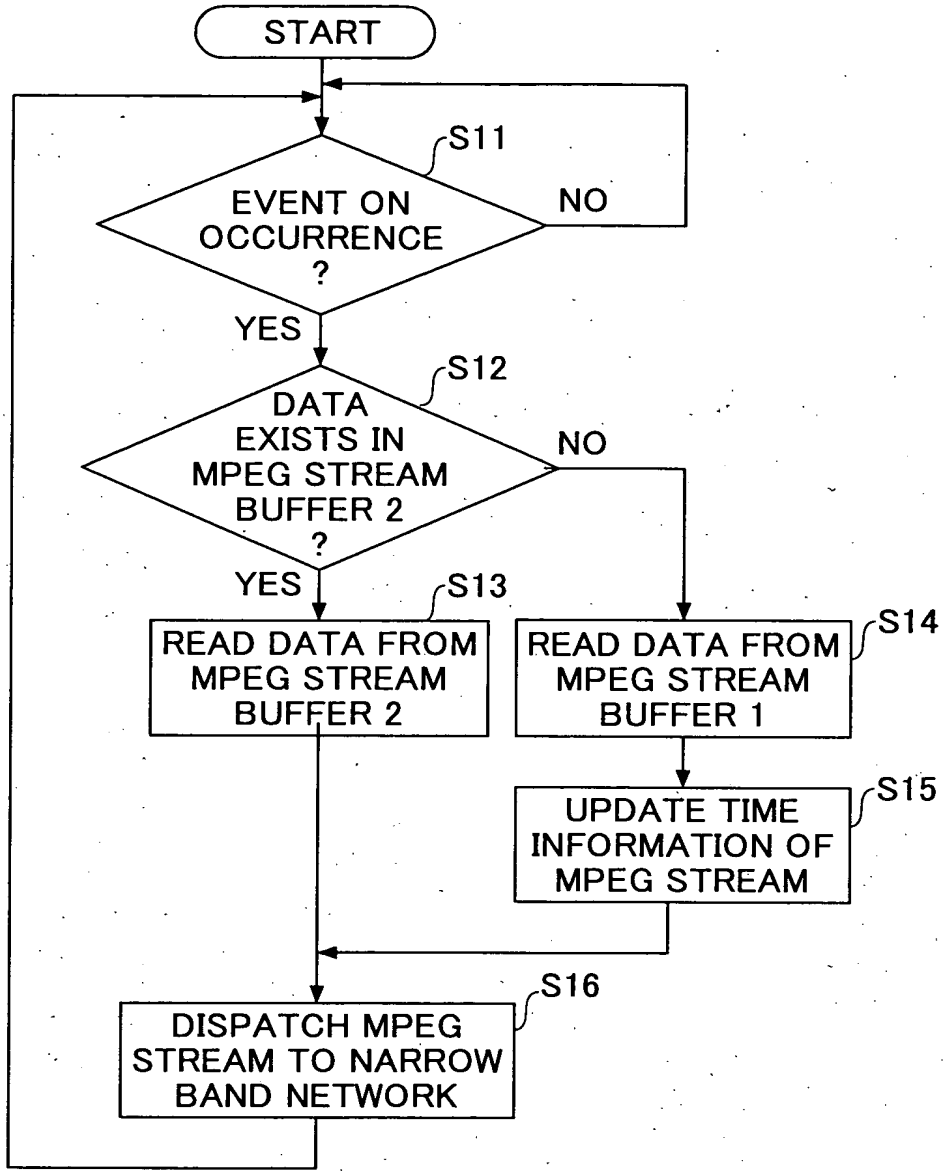

START
S11
EVENT ON OCCURRENCE ?
NO
YES
S12
DATA EXISTS IN MPEG STREAM BUFFER 2 ?
NO
YES
S13
READ DATA FROM MPEG STREAM BUFFER 2
S14
READ DATA FROM MPEG STREAM BUFFER 1
S15
UPDATE TIME INFORMATION OF MPEG STREAM
S16
DISPATCH MPEG STREAM TO NARROW BAND NETWORK

FIG.7

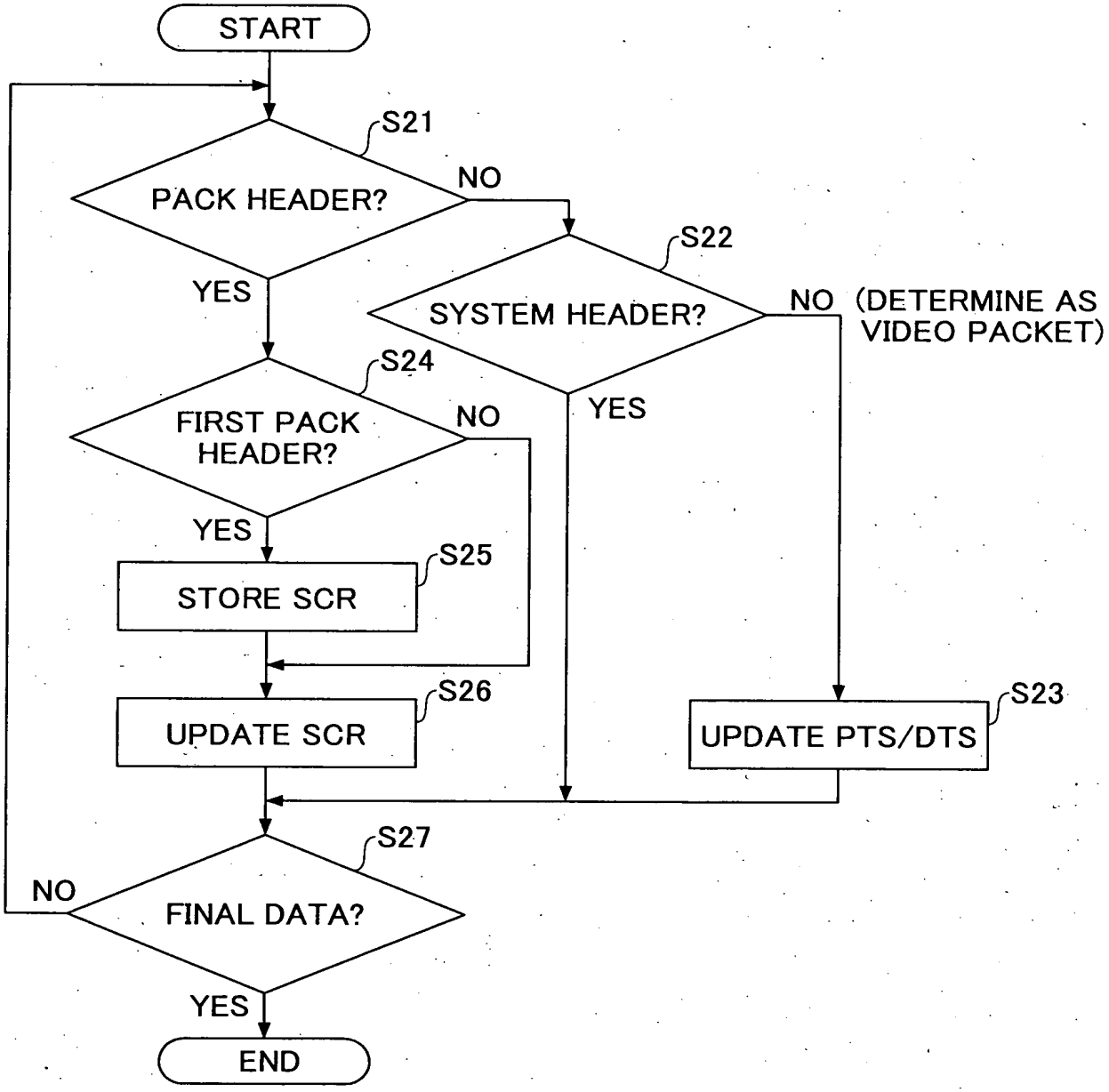

START
S21
PACK HEADER?
NO
YES
S22
SYSTEM HEADER?
NO (DETERMINE AS VIDEO PACKET)
YES
S24
FIRST PACK HEADER?
NO
YES
S25
STORE SCR
S26
UPDATE SCR
S23
UPDATE PTS/DTS
S27
FINAL DATA?
NO
YES
END

FIG.8

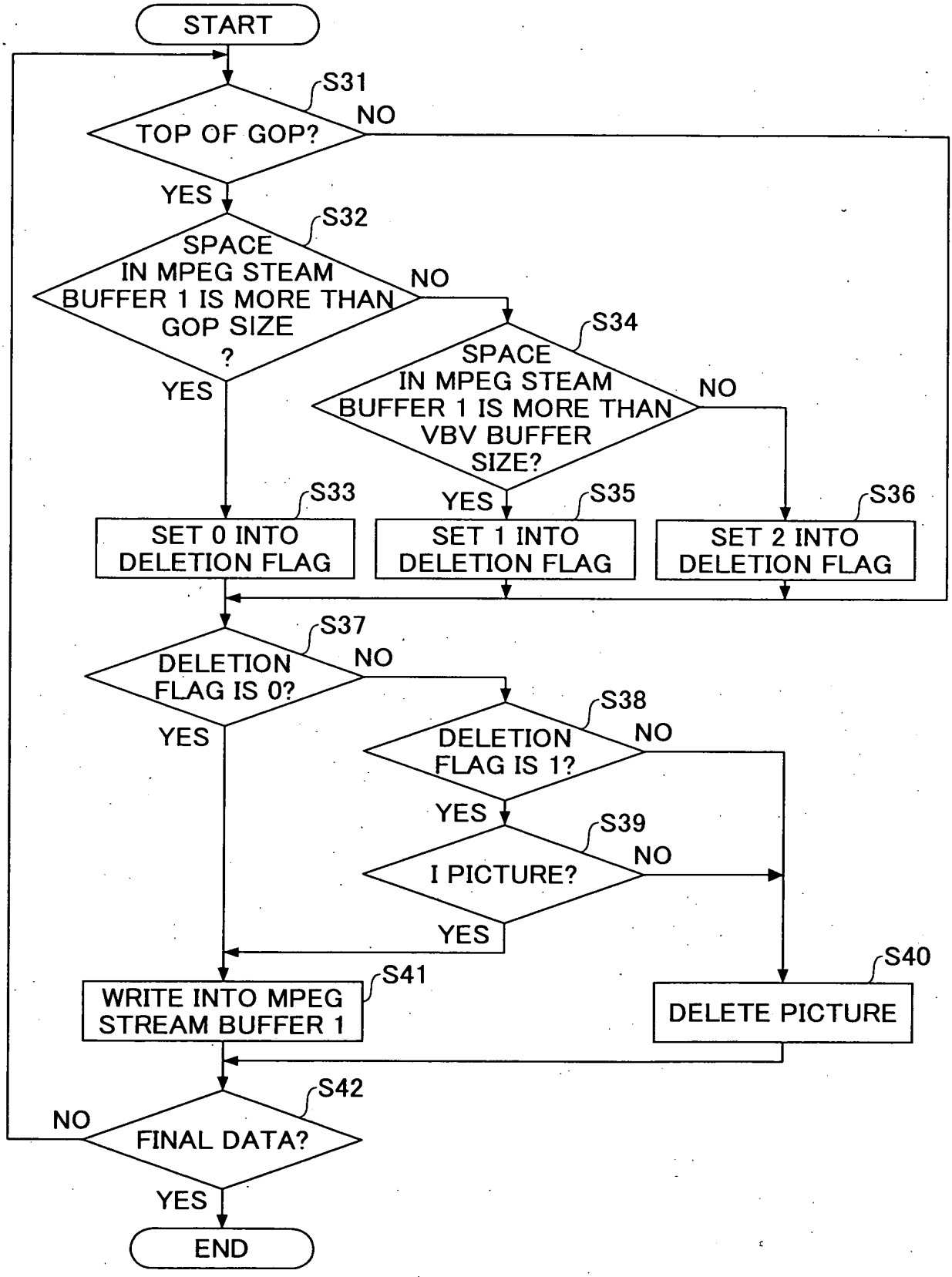

START
S31
TOP OF GOP?
NO
YES
S32
SPACE IN MPEG STEAM BUFFER 1 IS MORE THAN GOP SIZE ?
NO
YES
S34
SPACE IN MPEG STEAM BUFFER 1 IS MORE THAN VBV BUFFER SIZE?
NO
YES
S33
SET 0 INTO DELETION FLAG
S35
SET 1 INTO DELETION FLAG
S36
SET 2 INTO DELETION FLAG
S37
DELETION FLAG IS 0?
NO
YES
S38
DELETION FLAG IS 1?
NO
YES
S39
I PICTURE?
NO
YES
S41
WRITE INTO MPEG STREAM BUFFER 1
S40
DELETE PICTURE
S42
FINAL DATA?
NO
YES
END

FIG.9

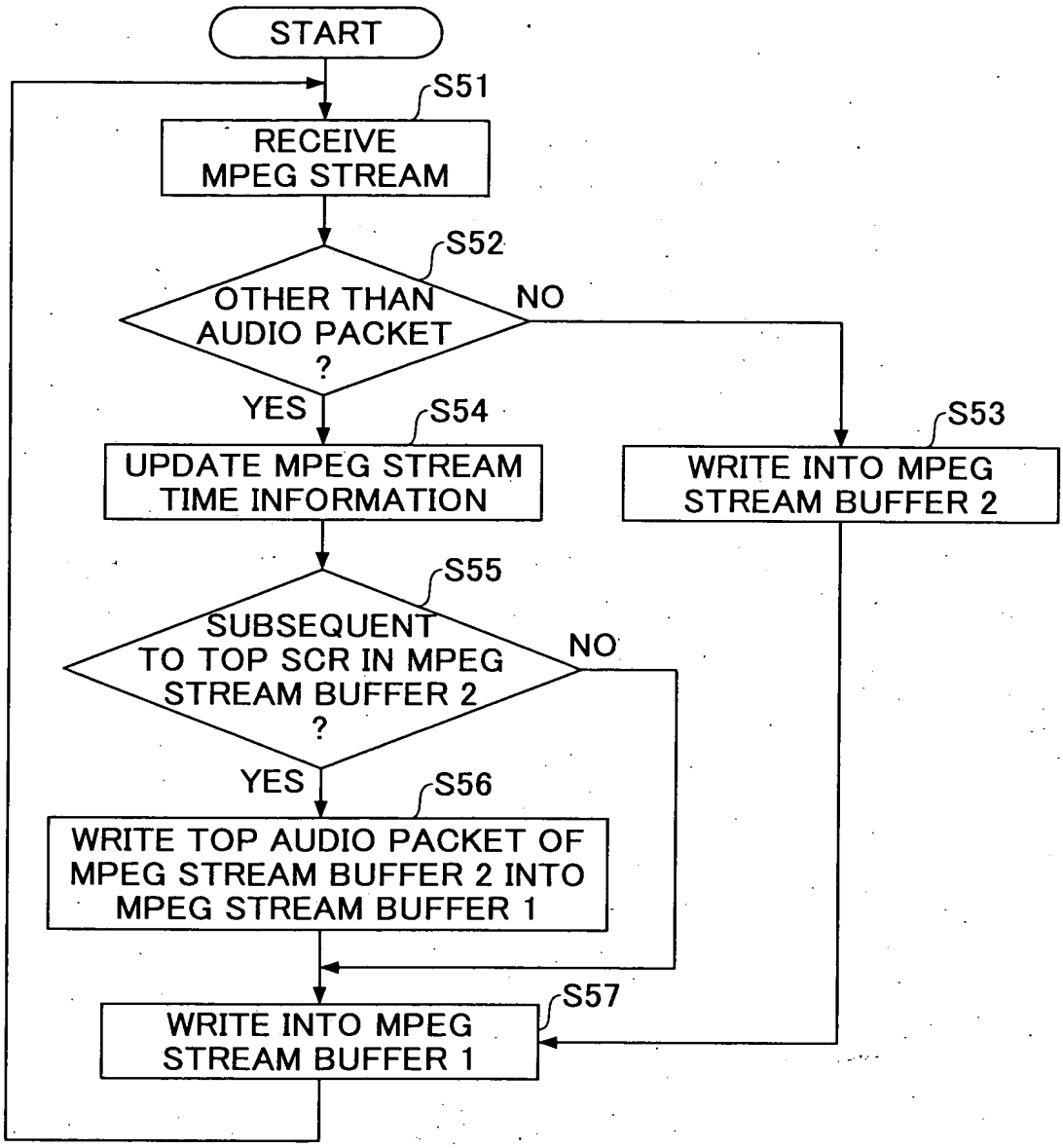

START
S51
RECEIVE MPEG STREAM
S52
OTHER THAN AUDIO PACKET ?
NO
YES
S54
UPDATE MPEG STREAM TIME INFORMATION
S53
WRITE INTO MPEG STREAM BUFFER 2
S55
SUBSEQUENT TO TOP SCR IN MPEG STREAM BUFFER 2 ?
NO
YES
S56
WRITE TOP AUDIO PACKET OF MPEG STREAM BUFFER 2 INTO MPEG STREAM BUFFER 1
S57
WRITE INTO MPEG STREAM BUFFER 1

FIG.10

SYNTAX	NUMBER OF BITS	MNEMONIC
MPEG2_program_stresm() {		
do {		
pack()		
} while(nextbits()==pack_start_code)		
MPEG_program_end_code	32	bslbf
}		

FIG.11

SYNTAX	NUMBER OF BITS	MNEMONIC
pack() {		
pack header()		
while(nextbits() ==packet start code prefix) {		
PES_packet()		
}		
}		

FIG.12

SYNTAX	NUMBER OF BITS	MNEMONIC
pack_header() {		
pack_start_code	32	bslbf
'01'	2	bslbf
① system_clock_reference_base[32..30]	3	bslbf
marker_bit	1	bslbf
system_clock_reference_base[29..15]	15	bslbf
marker_bit	1	bslbf
system_clock_reference_base[14..00]	15	bslbf
marker_bit	1	bslbf
system_clock_reference_extension	9	uimsbf
marker_bit	1	bslbf
program_mux_rate	22	uimsbf
marker_bit	1	bslbf
marker_bit	1	bslbf
reserved	5	bslbf
pack_stuffing_lengrh	3	uimsbf
for(i=0;<pack_stuffing_;i++) {		
stuffing_byte	8	bslbf
}		
if(nextbits() == system_header_start_code) {		
system_header ()		
}		
{		

FIG.13

SYNTAX	NUMBER OF BITS	MNEMONIC
sysytem_header() {		
system_header() {	32	bslbf
header_length	16	uimsbf
marker_bit	1	bslbf
rate_bound	22	uimsbf
marker_bit	1	bslbf
audio_bound	6	uimsbf
fixed_flag	1	bslbf
CSPS_flag	1	bslbf
system_audio_lock_flag	1	bslbf
system_video_lock_flag	1	bslbf
marker_bit	1	bslbf
video_bound	5	uimsbf
packet_rate_restriction_flag	1	bslbf
reserved_byte	7	bslbf
while(nextbits() == '1') {		
stream_id	8	uimsbf
'11'	2	bslbf
P-STD_buffer_bound_scale	1	bslbf
P-STD_buffer_size_scale	13	uimsbf
}		
}		

FIG.14

SYNTAX	NUMBER OF BITS	MNEMONIC
PES_packet() {		
packet_start_code_prefix	24	bslbf
stream_id ←④	8	uimsbf
PES_packet_length	16	uimsbf
if(stream_id != program_stream_map		
&& stream_id != padding_stream		
&& stream_id != private_stream2	2	
&& stream_id != ECM		
&& stream_id != EMM		
&& stream_id != program_stream_directory		
&& stream_id != DSMCC_stream		
&& stream_id != ITU-T recommendation H.222.1 type E_stream) {		
'10'	2	bslbf
PES_scramblig_control	2	bslbf
PES_riority	1	bslbf
data_alignment_indicator	1	bslbf
copyright	1	bslbf
original_or_copy	1	bslbf

FIG.15

PTS_DTS_flags		2	bslbf
ESCR_flag		1	bslbf
ES_rate_flag		1	bslbf
DSM_23ick_mode_flag		1	bslbf
additional_copy_info_flag		1	bslbf
PES_CRC_flag		1	bslbf
PES_extension_flag		1	bslbf
PES_header_data_length		8	uimsbf
if(PTS_DTS_flags =='10') {			
'0010'	②	4	bslbf
PTS [32..30]		3	bslbf
marker_bit		1	bslbf
PTS [29..15]		15	bslbf
marker_bit		1	bslbf
PTS [14..0]		15	bslbf
marker_bit		1	bslbf
}			
if(PTS_DTS_flags =='11') {			
'0011'	②	4	bslbf
PTS [32..30]		3	bslbf
marker_bit		1	bslbf
PTS [29..15]		15	bslbf
marker_bit		1	bslbf
PTS [14..0]		15	bslbf
marker_bit		1	bslbf
'0001'	③	4	bslbf
DTS [32..30]		3	bslbf
marker_bit		1	bslbf
DTS [29..15]		15	bslbf
marker_bit		1	bslbf
DTS [14..0]		15	bslbf
marker_bit		1	bslbf

FIG.16

SPECIFIC NUMERAL EXAMPLE
OF SCR/PTS/DTS(FOR ONE SECOND)
SCR/PTS/DTS (msec)
BEFORE CONVERSION

SRC	Video PTS/DTS	Audio PTS
666	872	
684		837
707		861
731		885
756		909
779		933
804		957
827		981
831	906	
845	939	
851		1005
858	973	
875		1029
899		1053
910	1006	
921	1039	
924		1077
933	1073	
947		1101
972		1125
988	1106	
995		1149
1000	1139	
1011	1173	
1019		1173
1044		1197
1064	1206	
1067		1221
1077	1240	
1088	1273	
1092		1245
1115		1269
1140		1293

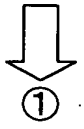
①

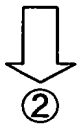
SCR/PTS/DTS (msec)
AFTER TRIPLING CONVERSION

SRC	Video PTS/DTS	Audio PTS
666	1284	
720		1179
789		1251
861		1232
936		1395
1005		1467
1080		1539
1149		1611
1161	1386	
1203	1485	
1221		1683
1242	1587	
1293		1755
1365		1827
1398	1686	
1431	1785	
1440		1899
1467	1887	
1509		1971
1584		2043
1632	1986	
1653		2115
1668	2085	
1701	2187	
1725		2187
1800		2259
1860	2286	
1869		2331
1899	2388	
1932	2487	
1944		2403
2013		2475
2088		2547

②

FIG.17

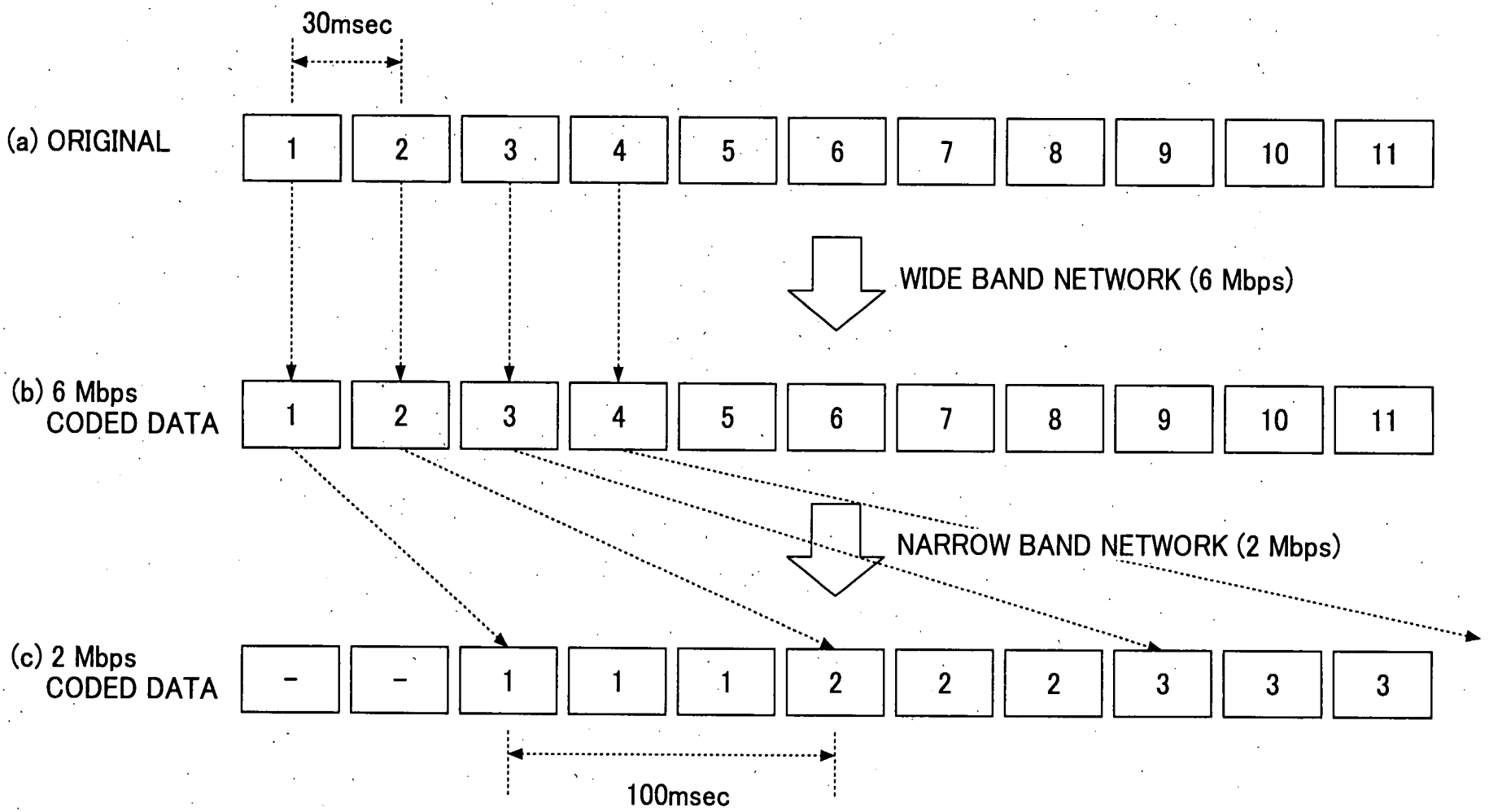




1141	1306	
1152	1340	
1163		1317
1165	1373	
1187		1341
1212		1365
1235		1389
1260		1413
1283		1437
1307		1461
1331		1485
1335	1406	
1346	1440	
1355		1509
1359	1473	
1380		1533
1403		1557
1411	1506	
1422	1540	
1428		1581
1433	1573	
1451		1605
1475		1629
1489	1607	
1499		1653
1500	1640	
1510	1673	
1523		1677
1548		1701
1566	1707	
1571		1725
1578	1740	
1589	1773	
1596		1749
1619		1773
1641	1807	
1643		1797
1653	1840	
1665	1873	

2091	2586	
2124	2688	
2157		2619
2163	2787	
2229		2691
2304		2763
2373		2835
2448		2907
2517		2979
2589		3051
2661		3123
2673	2886	
2706	2988	
2733		3195
2745	3087	
2808		3267
2877		3339
2901	3186	
2934	3288	
2952		3411
2967	3387	
3021		3483
3093		3555
3135	3489	
3165		3627
3168	3588	
3198	3687	
3237		3699
3312		3771
3366	3789	
3381		3843
3402	3888	
3435	3987	
3456		3915
3525		3987
3591	4089	
3597		4059
3627	4188	
3663	4287	

FIG.18


30msec
(a) ORIGINAL
1
2
3
4
5
6
7
8
9
10
11
WIDE BAND NETWORK (6 Mbps)
(b) 6 Mbps
CODED DATA
1
2
3
4
5
6
7
8
9
10
11
NARROW BAND NETWORK (2 Mbps)
(c) 2 Mbps
CODED DATA
-
-
1
1
1
2
2
2
3
3
3
100msec